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DOD MATERIEL ACQUISITION: HIGH LEVEL PROBLEMS REQUIRE HIGH LEVEL CURES

BY

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Approximately $117.9 billion of the $292.9 billion annual DOD budget is allocated to acquisition programs. It has been estimated that for every $1.44 expended, the government receives only $1.00 of goods and services in return. In other words, inefficiencies account for in excess of $36 billion in lost purchasing power each year. The Congress has attempted to cure the ills of acquisition by legislating the DOD process to "perfection". But like earlier DOD initiatives, the Congress attempted cures through piecemeal legislation. As a result, the acquisition process is still an inefficient bureaucratic mess. Major problems with the process were solicited from a cross-section of key players in the acquisition community--from industry, project management offices, and government agencies directly affiliated with defense acquisition. Based on recommendations, insights, experiences, and research, the author provides recommendations for how to improve the acquisition process. Success of this proposal rests with the willingness of the Executive and Legislative Branches to commit jointly to a comprehensive

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DOD MATERIEL ACQUISITION: HIGH LEVEL PROBLEMS REQUIRE HIGH LEVEL CURES

AN INDIVIDUAL STUDY PROJECT

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ABSTRACT

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TABLE OF CONTENTS

Page

ABSTRACT.....ii

LIST OF ILLUSTRATIONS.....iv

CHAPTER I. INTRODUCTION.....1

II. THE ACQUISITION PROCESS.....13

III. THE ENVIRONMENT OF THE PROGRAM MANAGER.....19

IV. INSIGHTS FROM GOVERNMENT.....23

V. INSIGHTS FROM INDUSTRY.....38

VI. IMPROVING THE ACQUISITION PROCESS.....45

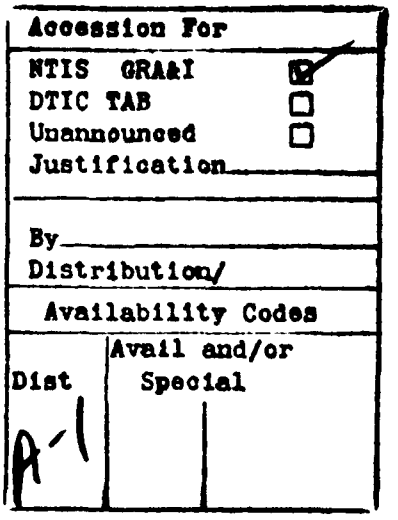
RECOMMENDATIONS.....48

CONCLUSION.....57

TABLE 1.....58

ENDNOTES.....60

BIBLIOGRAPHY.....62



LIST OF ILLUSTRATIONS

Figure Page

Figure 1. Proposal Page Count Comparison.....5

Figure 2. The Elements of National Power.....7

Figure 3. Life Cycle of a Major Defense Acquisition Program..13

Figure 4. DOD Acquisition Activities.....16

Figure 5. Program Manager's Reporting Chain.....24

DOD MATERIEL ACQUISITION: HIGH LEVEL PROBLEMS REQUIRE HIGH LEVEL CURES

CHAPTER I

INTRODUCTION

Sizing Up the Situation. Members of the defense materiel acquisition community should take pride in their accomplishments--they have produced very effective modern weapons systems. A good example is the the Patriot missile that proved tactically effective in its first combat use, successfully intercepting Iraqi Scud missiles in almost every engagement. But as a note of caution, the acquisition community should not become so enamored by its more immediate successes that it mortgages its future. Continued modernization is necessary, and additional operational deficiencies identified in recent combat experiences will have to be resolved. All will entail substantial costs.

To my point--as the war draws to an end, the realities of shrinking budgets and reduced force structures will re-emerge. Competition for resources will intensify, perhaps more than ever before in history. Something must be done. Squeezing harder on smaller organizations, in an attempt to get more from less, will produce marginal returns. As history has shown, there are limits to how far people will be pushed. On the other hand, even in the face of shrinking budgets, where there are economies to be gained, more can be had for less, a lot more.

The FY1990 defense budget was greater than $292.9 billion total budget authority, of which slightly more than 40 percent (approximately $36.5 billion RDTE and $81.4 billion procurement)

is allocated to acquisition programs. [1] Recently, it was estimated that for every $1.44 expended, the government only receives $1.00 worth of goods and services. [2] (Keep in mind that printed estimates of the efficiency of government programs range widely--roughly between 50 and 75 percent.) The point is that even modest improvements in acquisition efficiencies would result in significant savings, funds to be used for other national needs. The question is how to achieve such efficiencies. The answer has to do with overcoming old prejudices and fixed trains of thought on both sides of the Potomac, i.e., breaking paradigms.

A Historical Perspective. As a point of departure, let me guide you through a scenario that contrasts the present with the past. (Note: This passage contains many common acronyms. For ease of reading, the meaning of each has been deleted from the text and put at the end of the passage.)

Major "Iron Mike" Aviator just received a phone call from his counterpart in DAMO-FDV, stylish Pentagonese use in "the Building" to identify the aviation division in ODCSOPS. It's good news! After months of near-endless work convincing the Army that it has a serious mission area deficiency, and countless briefings and revisions to the ROC, the O&O, and the MNS, it now looks as though Iron Mike's proposed new start program for a helicopter will be approved. DIA validated the threat analysis. Coupled with a well-received MNS, and what appears to be strong support from all the appropriate people in OSD, there is every reason to believe that the DAB will approve program initiation at the scheduled Milestone Zero decision meeting. Finally, the work is over and it's time to celebrate, or is it?

Six years later, try on the following for size: total aircraft buy down from 2,096 to 1,292; production rate down from 216 to 120 per year; seven more years to achieve IOC; sixteen years to complete production; oversight; micromanagement; and briefings ad infinitum.

Finally, the easy part--we have convened a Source Selection Board. What! 50-62 t-h-o-u-s-a-n-d pages of documentation from each competing contractor. For a helicopter? Now add a dose of legislative tinkering, "bill payers", investigations, audits, rejustify the requirement, rescope the program, ..., and you begin to sense something foul. But this scenario only describes a small part of the acquisition environment. Now multiply this situation by the total number of acquisition programs, and add the average daily burden of external reporting imposed on DOD--3 new GAO audits; 400 written inquiries from Capitol Hill; 2,500 phone inquiries; 3 separate reports to the Congress (each averaging 1,000 hours and $50,000.00 in preparation); and 40 hours in preparation for 14 hours of testimony before the Congress. [3] Throw in a few years of frustration and disappointment, and an ugly image of that foul sensing comes to form.

In contrast, on 23 December 1907, the U.S. Army Signal Office issued a one page Advertisement and Specification, and the United States became the first country to contract for a military airplane. Less than 7 weeks later, on 1 February 1908, 41 bids were received. Three bidders met the requirements outlined in the specification that contained such language as, "desirable...quick and easy assembly; ...carry two persons...a combined weight of

about 350 pounds; ...fuel for about 125 miles; ...speed of at least 40 miles per hour in still air; ...sufficiently simple in its construction and operation to permit an intelligent man to become proficient in its use within a reasonable period of time; ...price...to include the instruction of two men...". Seven months later, on 3 September 1908, the first test flight (1 minute and 11 seconds) was conducted. Following further test flights, a crash, and understandable delays, on 2 August 1909, the Army accepted the Wright Brothers' U.S. Army Aeroplane No. 1. [4]

In stark comparison are the nearly 50 to 60-odd thousand pages of proposal documentation submitted by the McDonnell Douglas-Bell Textron Superteam and the Boeing-Sikorsky First Team, respectively, in competition for the Light Helicopter (LH). [5, 6] This may not seem particularly significant in light of the obvious technical differences between Aeroplane No. 1 and the LH, but Aeroplane No. 1 was a technological challenge in its time, and there is a lesson in this comparison, soon to be addressed. However, it is a different situation altogether when comparing the LH to other complex aerospace projects. Figure 1 suggests that industry has concluded that in order to be competitive, proposal documentation for a modern helicopter must now far exceed that previously used to win contracts for other advanced systems--like cruise missiles, advanced aircraft, and even a space station. It is easy to understand why so many in the acquisition business have become cynical, and why many have concluded that the defense acquisition process is out of control--a cancer in need of major surgery.

PROPOSAL PAGE COUNT
APPROXIMATE PAGES PER PROJECT

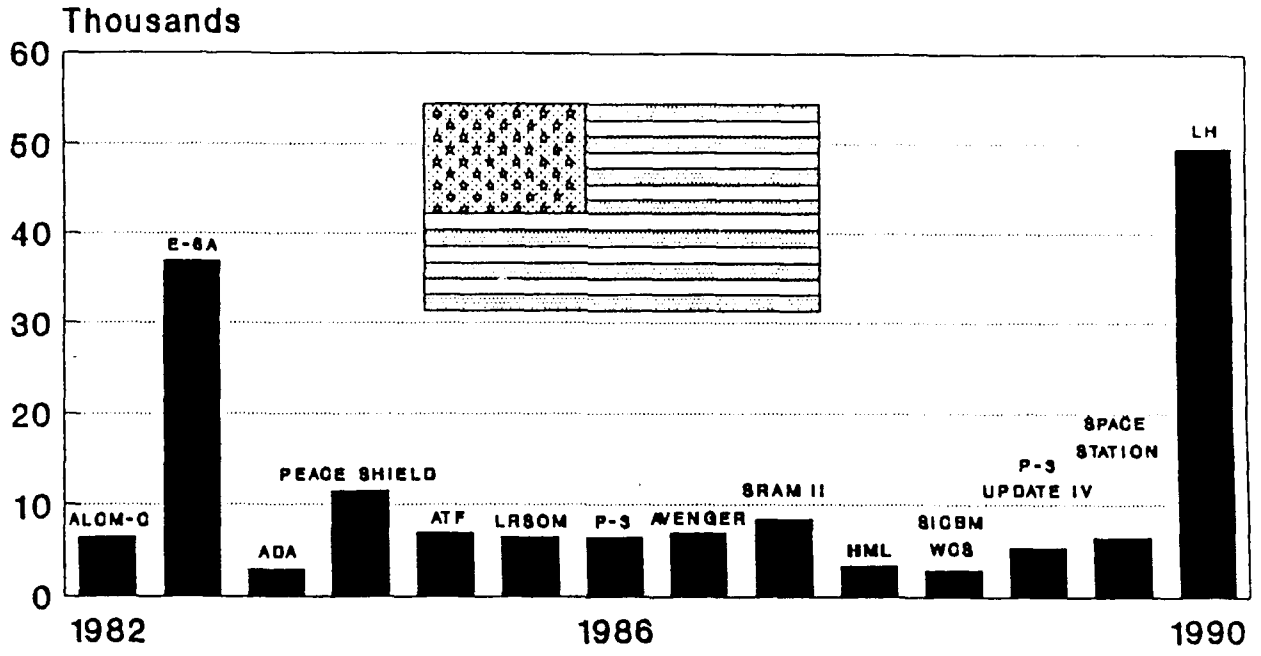


FIGURE 1.
PROPOSAL PAGE COUNT COMPARISON [6]

Back to Aeroplane No. 1, there is a lesson to be re-learned. The terms and specifications were simple; what they conveyed was "intent". Today, intent is still a key ingredient for successful programs, and I am optimistic enough to believe that intent does not require thousands of pages. Honorable men working together in an atmosphere of sufficient authority can produce exceptionally capable hightech systems, at reasonable costs, and without need for over-supervision and volumes of documentation. For those in doubt, I would simply direct your attention to the routine accomplishments achieved in many "black" programs, by DARPA, and through thousands of commercial contracts.

ACRONYMS

DAMO-FDV	An office symbol for the Aviation Division, ODCSOPS
DAB	Defense Acquisition Board
DARPA	Defense Advanced Research Programs Agency
DIA	Defense Intelligence Agency
GAO	General Accounting Office
IOC	Initial Operational Capability
MNS	Mission Need Statement
ODCSOPS	The Army's Office of the Deputy Chief of Staff for Operations and Plans
O&O	Operational and Organizational Plan
OSD	Office of the Secretary of Defense
ROC	Required Operational Capability

Acquisition--An Element of National Strategy. The U.S. Army War College model at Figure 2 can be used to demonstrate that national power is derived from a continuum of political-diplomatic, economic, and military elements. These elements are tailored as strategies in response to a variety of global and domestic environmental factors. For a strategy to be effective, it must rest on a balanced foundation of objectives, concepts, and resources, as depicted by the three-legged stool.[7]

This paper is not about politics, strategic concepts, or for that matter, three-legged stools. It is about one leg of the stool, resources, and a special category at that--military weapons systems. More specifically, it deals with ways to improve the

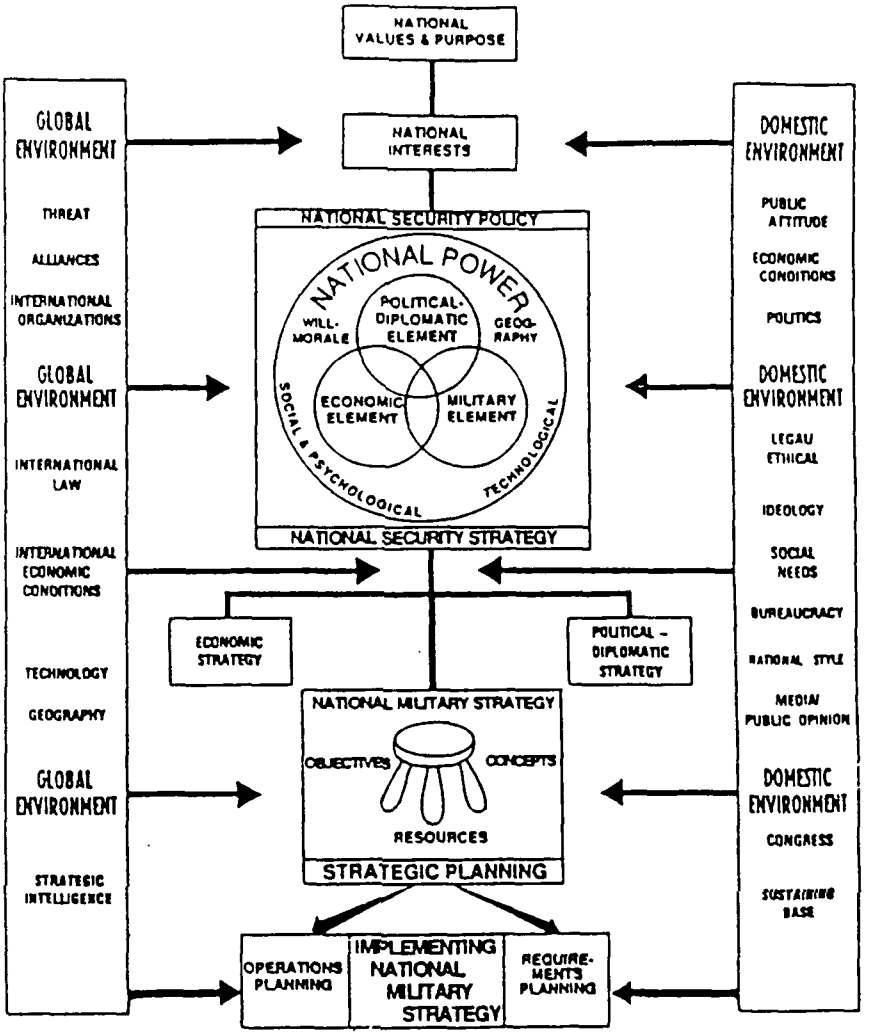


FIGURE 2.
THE ELEMENTS OF NATIONAL POWER [7]

process through which we develop and acquire military hardware. Resources allocated to one sector of government affect resource allocations to other sectors. Since military acquisition programs consume a large portion of the national budget, their efficiencies and inefficiencies can significantly affect national strategy. With the mood of the Congress clearly behind reduced military spending, while the nation is firmly behind a military recently victorious at war, timing could not be better for DOD to gain

widespread support for reforming a wasteful and inefficient acquisition process.

Research Focus. Most of the research for this paper was centered around Army aviation. Government agencies that provided information for this project are all directly affiliated with the DOD acquisition process. Research with industry was limited to selected representatives of the four major U.S. rotary wing aviation contractors: Bell Helicopter, Boeing, McDonnell-Douglas, and United Technologies Sikorsky Aircraft. Rationale is that the aviation industry is sophisticated and complex, and it involves a wide range of scientific, engineering, and management disciplines. It is also supported by numerous diverse subcontractors who develop and produce components and subsystems that make up the end products--aircraft. Therefore, aviation is widely representative of a cross-section of the industrial perspective of the materiel acquisition process. By targeting a specific, yet complex and widely representative segment of industry, I was able to limit the scope of research while deriving contributions that may be useful to the DOD acquisition process.

Objectivity and Controversy. Issues presented in this paper may be provocative or even controversial. My approach is to be direct and factual, but honest and fair, while attempting not to skirt or avoid otherwise tough issues. Intent is to articulate substantive examples of identified problem areas and to provide suggested solutions that may make the acquisition process more effective, and yes, more rewarding for those involved.

The acquisition community is charged with a rising tide of emotion centered on frustrations over serious concerns about lack of authority and latitude, over-regulation, bureaucratic procedures, funding instability, oversight, etc. There are countless reasons why those inside the "system" (the Services, OJCS, DOD, industry, etc.) have been slow or powerless to affect the necessary changes. Examples include: too many actions and not enough time to tend to what is already on the "plate"; confusion over current or new procedures and requirements; it's in the "too hard to do" basket; etc. Controversial issues are often debated with great enthusiasm and emotion, but approaches toward resolution are generally more tempered and conservative, particularly if they must go up the chain-of-command, or outside, for decisions. In other words, there is great reluctance to "rock the boat". Though an ill may be apparent, or even blatantly obvious at one level, it may go unnoticed or be viewed as unimportant at another. Second, upward or outward expressions of perceived ills and potential solutions are generally committee efforts. Third, political considerations often will determine whether or not an issue is worthy, and politics may or may not have any direct bearing on the subject at hand. As a result, conclusions and recommendations are overdue, watered down, and ineffective. Those on Capital Hill are also part of the problem. The Congress is prone to legislate "regional" defense policies indifferent to national defense needs. Annual legislative tinkering focuses on short-term objectives, usually failing to anticipate more widespread and long-term results. It is no wonder

that "status quo" has come to dominate in spite of outcries from the "trenches" about the "abundantly obvious". The results--frustration, emotions, inefficiencies, complacency, mistakes, lost time, wasted money, ..., and an acquisition system struggling for survival.

The Setting. Cost, schedule, and performance are key buzzwords used to measure the performance of materiel acquisition programs. However, I have been unable to find even one example of a "major system" that has achieved cost, schedule, and performance objectives, let alone meeting reliability, availability, maintainability, and supportability criteria. Unfortunately, the overruns generally are not small. As an example, the Navy A-12 program was recently reported to be approximately $1.4 billion over cost and at least 18 months behind schedule. In other words, a $4.8 billion development effort was nearly 30 percent over spent. Estimates to fix the ailing program ranged between $1.4 and $4.0 billion. [8] Failure to even closely achieve program objectives is frustrating--to the public, to the acquisition community, and to the Congress. In this case, on 8 January 1991, Secretary of Defense Dick Cheney cancelled the program. Now a documented, approved mission deficiency has no program to fill the void. Additional costs will ultimately be incurred, assuming an adjusted or a replacement program is approved. Thousands of people and businesses will be hurt--they're out of work, and the Navy is left without a next generation weapons system with which to help defend this nation. The consequences certainly may have impacts on national strategy.

For a moment let me take you to a more personal example of failure to meet the requirement. The Advanced Antitank Weapons System-Medium (AAWSM) is the Army's next generation man-portable antitank weapon. Originally, the requirement was for a 35 pound system, certainly a weight that falls within the ability of a reasonably fit combat soldier to "hump" cross-country. The Army's Human Engineering Laboratory recommended that the weight not exceed 32 pounds, but in order to obtain the desired technology, a fire-and-forget weapon, the Army advertised the desired weight specification to be less than 45 pounds. Recently, at the eleventh hour of the development cycle, the contractor notified the Army that the weight had grown to nearly 50 pounds, and a sizeable development effort would be needed to achieve less that 49.7 pounds. The Army had to make a decision--delay fielding of a pretty spiffy replacement for the obsolete Dragon while spending many more millions of dollars, or accept a heavier weapon, again. [9] The latter option was elected. Who will pay the bill? The infantryman will, for years to come. And what will be the price? Next time you're in the gym, pick up a 35 pound weight in one hand and a 15 pound weight in the other hand. After registering the weights mentally, imagine yourself as a member of an infantry platoon preparing to "hump" that 35 pounds cross-country, along with all the other 45 pounds of gear, rations, water, ammunition, individual weapon, etc., that you need for combat. Hope that the objective area isn't too far away and you aren't hindered by rough terrain, heat, water obstacles, or having to cross NBC (nuclear, biological, and chemical) contaminated areas. Now, as you're ready

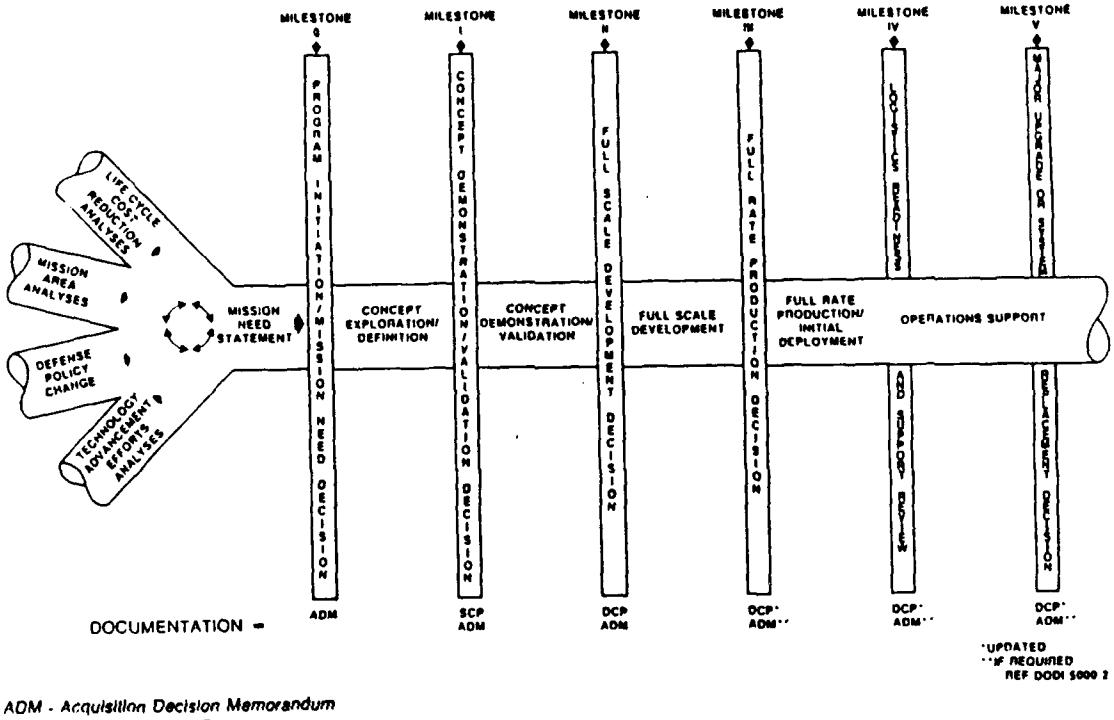
to move out, imagine being told that you will have to carry another 15 pounds. Your mental outlook just changed, and so did the tactical situation for every soldier in that platoon. Adding nearly 15 pounds to every antitank weapon will cause other adjustments to be made. Let me make it clear, I am not criticizing the decision that was made at the eleventh hour--suck up the 15 additional pounds or else.... The flawed system that forces us to accept unmet specifications is the subject of my criticism.

CHAPTER II

THE ACQUISITION PROCESS

The thesis of this paper is to suggest means by which to improve the acquisition process. In order to have a departure point, it seems appropriate to begin with a brief review of the defense acquisition process. Figure 3 is provided as a convenient reference.

LIFE CYCLE OF A MAJOR DEFENSE ACQUISITION PROGRAM



ADM - Acquisition Decision Memorandum
SCP - Systems Concept Paper
DCP - Decision Coordinating Paper

FIGURE 3.
LIFE CYCLE OF A MAJOR DEFENSE ACQUISITION PROGRAM [10]

At first glance it would appear that the acquisition process is relatively logical and straight forward. But, surface appearances do not always tell the whole story. This chapter will

briefly describe the various phases of the acquisition process, along with a depiction of the many complex tasks that must be accomplished during each phase.

The term Life Cycle refers to the management of a system that occurs essentially from conception of a requirement through retirement of the fielded end item. To facilitate management, the life cycle model is described in successive phases that essentially stratify development, production, deployment, and sustainment. The DOD committee that provides executive oversight of major defense systems is called the Defense Acquisition Board (DAB). The DAB convenes at prescribed intervals called milestones to make program decisions. A milestone decision is usually required in order for a program to proceed from one phase of the life cycle to another. [11]

Events leading to a Milestone 0 (Zero) decision technically are not a phase in the life cycle of a program. Rather they are a series of threat analyses and other activities, including a lenghty mission area analysis (MAA), which may occur over a period of years. This process results in the production of a Mission Need Statement (MNS), that when approved by the DAB is then included in the Program Objective Memorandum (POM) to allow competition for funding.

Following a Milestone 0 decision, the program enters the Concept Exploration/Definition (CE/D) phase, lasting approximately 1-2 years, during which various concepts are explored to determine the best alternatives to be pursued for development.

Following a Milestone 1 decision, the program enters the Concept Development/Validation (CD/V) phase, lasting approximately 2-3 years, during which preliminary designs and engineering development are conducted.

Following a Milestone 2 decision, the program enters the Full Scale Development (FSD) phase, lasting approximately 3-5 years, during which sub-system designs are completed and the system is readied for production. Also during FSD, on large systems, low rate initial production (LRIP) may be directed to test the production process.

Following a Milestone 3 decision, the program enters the Full Rate Production phase, that often includes more that one contractor. Product improvements may also be pursued in this phase of a program. Understandably, the number of years that systems are in production varies from program to program.

Approximately 1-2 years after deployment, a Milestone 4 review is conducted to re-evaluate operational readiness and supportability of the fielded system. Then approximately 5-10 years after deployment, a Milestone 5 review is conducted to evaluate feasibility of upgrades versus system replacement. [12]

Needless to say, the process is much more involved than outlined above. A more in-depth synopsis can be found in DOD Directive 5000.1 and in Introduction to Defense Acquisition Management, published by the Defense Systems Management College, Fort Belvoir, Virginia.

Beneath the neat, methodical surface of the Life Cycle Model, materiel acquisition management is a very complex web of tasks

(which I will refer to as activities) and sub-tasks that must be brought together in a very precise manner if a program is to achieve established cost, schedule, and performance objectives. As of December 1990, an ongoing government research program had identified more than 840 separate materiel acquisition activities that occur during the life cycle of a system. Figure 4 depicts the quantity of separate activities, the life cycle phase in which they occur, who is principally responsible for accomplishing these

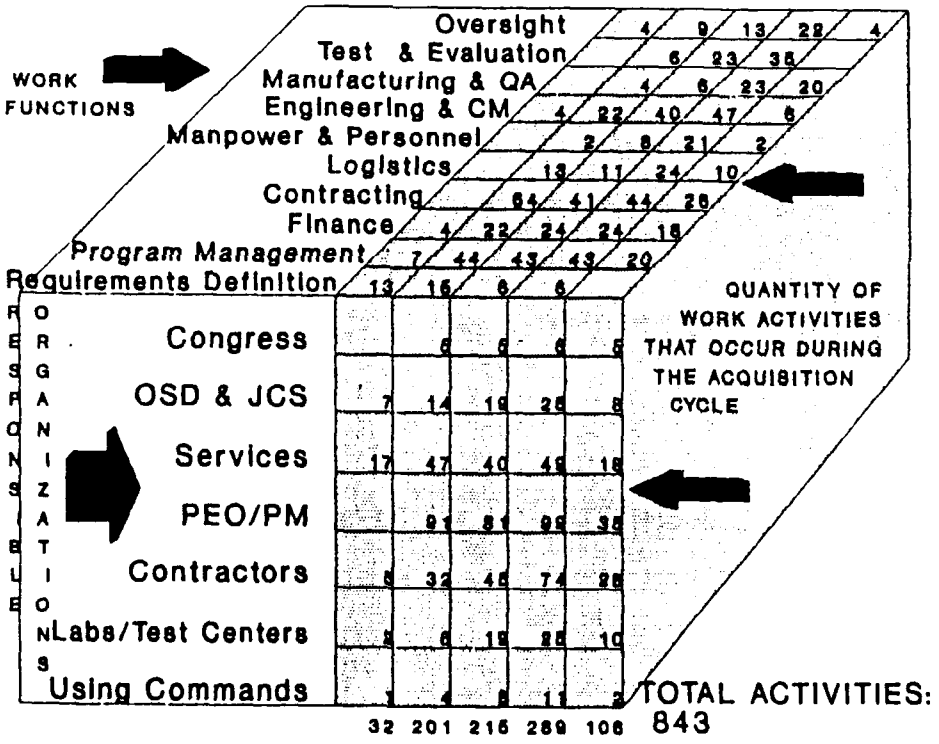


FIGURE 4.
DOD ACQUISITION ACTIVITIES: OVER 840 ACTIVITIES, INVOLVING 10 FUNCTIONAL AREAS OF WORK EFFORT, ACCOMPLISHED BY 7 DIFFERENT ORGANIZATIONS [13]

activities, and what functional areas of work effort are involved. As can be seen, 7 different major organizations are responsible

for accomplishing over 840 activities, involving as many as 10 distinct work functions. What is not shown, but clearly has significant influence on the successful outcome of a program, is that many of these activities and their sub-tasks, occur concurrently. To complicate the process further, separate bodies of industry and the Executive and Legislative branches of government are involved over a minimal 8-12 year life cycle period.

The complexities and dynamics of project management can only be sorted out by people, and thus the need for the Project Manager (PM) and members of the Project Management Office (PMO) who are personally responsible for the management and execution of a program. However, the plot thickens because the environment surrounding the PM is subject to constant changes often beyond his control--requirements, funding, priorities, personnel, industrial strikes, etc., and a PM seldom is provided full authority to run his program the way he sees fit. Instead, he is subject to a host of committee decisions, investigations, requirements for information, competition for resources, etc. As can be seen, a PM's effectiveness is directly influenced by a complex web of social, economic, political, and military considerations as he attempts to provide for the materiel needs of national defense. As previously stated, there are over 840 separate activities that the acquisition community must coordinate and complete or contend with in major programs. This is not to imply that every PM will have to deal with all 840-plus individual activities. Some will be unique to given programs. However, this compilation of input from

a wide spectrum of projects, surveyed across the Defense acquisition community, documents the total spectrum of issues and requirements for which PMs have ultimate responsibility. Table 1 is a representative sample of the types of activities that occur throughout the life cycle of a program. It also identifies the responsible agencies, and the functional areas within those agencies, that perform each activity. [14]

CHAPTER III

THE ENVIRONMENT OF THE PROGRAM MANAGER

The materiel acquisition community, government, and industry, have historically been provided with a great deal of outside scrutiny--laws, regulations, government reviews, oversight, public and private criticism, etc. But in the past 10 years or so it appears that the amount of interest has been on the rise--in the form of legislation, oversight, investigations, the press, etc.

Acquisition is bound by a series of laws created in the Congress that essentially evolved from the Armed Services Procurement Act (1947), amended and replaced by subsequent legislation. More recent examples include:

Small Business Act (1963), as amended;
Office of Federal Procurement Policy Act (1983), as amended;
Competition in Contracting Act (1984);
DOD Procurement Reform Act (1985);
DOD Reorganization Act of 1986.

In addition are annual authorizations and appropriations legislation which not only sets quantities and budgets, but also has the effect of fine tuning congressional intent. [15]

Authority and guidance is also provided by the Executive Branch in the form of Executive Orders (EO) and National Security Decision Directives (NSDD) from the President, and various departmental and agency regulations, such as:

EO 12352 (1982) directing procurement reforms and establishing the Federal Acquisition Regulation (FAR) system;

NSDD 219 (1986) directing implementation of the recommendations of the Packard Commission;

Small business set-aside contracts directed by the Small Business Administration;

Equal opportunity and wage rate directives by the Labor Department;

Aviation regulations by the Federal Aviation Administration;

Office of Management and Budget (OMB) which established basic acquisition policy for federal agencies in OMB Circular A-109 (1976);

Federal Acquisition Regulations (FAR) (published in 1984) to standardize federal acquisition of supplies and services using appropriated funds; and the

DOD FAR Supplement (DFARS) to prescribe DOD acquisition procedures. [16]

Though only the tip of the iceberg, this brief listing of statutes and regulations demonstrates that there is a significant volume of law and regulatory guidance to govern the acquisition process. Every single government and industry employee interviewed in researching this subject expresses intense frustration concerning gross over-regulation. In fact, the fine tuning of law done annually in authorization and appropriation legislation is widely received as inappropriate "congressional tinkering and micromanagement".

There are important messages imbedded in this perception. The U.S. Congress is losing control of its own processes and the nation is suffering as a result. In 1950 the U.S. produced approximately 52 percent of all the world's goods and services. Coupled with nuclear supremacy, America was the international balance of power. In the late 1960s our international dominance was in rapid decline. By the 1970s we produced about 30 percent of the world's goods and services, and by 1986, the figure was down to only 22 percent. [17]

Elected officials are surrounded by professional staffs that have grown too large and complex. Reportedly there are approximately 18,000 staff members in Congress. [18] By comparison, between World War II and 1986, the U.S. population increased 59 percent, while the Congressional staff ballooned by more than 700 percent. [19] Many staffers become very knowledgeable in specialized areas, and human nature motivates them to reinforce the importance of their positions. Keying on inefficiencies and pork barrel politics, these staffers diligently work to involve congressmen in their projects. It is not that it takes congressional assistance to resolve situations for DOD that resulted in government hammers costing $500.00 each, but it is good publicity. Public representatives who want to be elected next time around want to be seen personally involved in fixing government mismanagement that wastes tax dollars. The net results--a congressional focus on far too many small, near-term issues and too much legislation that deals with "how" rather than "what". Furthermore, congressional staff micromanagement undermines the authority and effectiveness of our elected representatives by diverting attention away from more important and long-lasting issues. In my opinion, a result is short sighted policies that have eroded the economic and industrial power of the nation.

It is little wonder that the U.S. has become largely uncompetitive among other industrial nations. Short-sighted policies originating at the head of government cause myopic planning in the civil sector. In fact, the single strongest

criticism of U.S. industry by banking officials interviewed was that American industry does not have the ability to develop effective long-range plans. Planning used to justify loans is normally ineffective beyond two years out. In sharp contrast, Japanese planning is normally done in great detail 10 years out and farther. [20] Because a great deal of the national power is derived from the economic policies, it becomes evident that if the Congress is too short-sighted, its legislation will also hamper long-term civil industrial planning and development. Thus national strategy is significantly impacted not only by the myopic attention the Congress pays to acquisition programs, but because of the incomplete attention that it can then direct to broader national and international issues affecting the economy in general. Hence another reason why DOD initiatives for the reform of acquisition oversight and legislation are timely and necessary.

Back to the legal environment of materiel acquisition. Perhaps there is a lesson to be learned from Augustine's Law X:

> Bulls do not win bull fights;
> people do.
> People do not win people fights;
> lawyers do. [21]

For sure there is a lesson in Augustine's Law XXVI:

> If a sufficient number of management layers are superimposed on top of each other, it can be assured that disaster is not left to chance. [22]

CHAPTER IV

INSIGHTS FROM GOVERNMENT

This chapter documents a government perspective of problems and concerns with the acquisition process. Issues were solicited from individuals assigned to PMOs and DOD agencies. All contributors are directly affiliated with materiel acquisition. Editorial changes were made to responses for ease of reading, but care was taken to preclude altering expressed intent. Related issues are grouped together under common titles for organizational convenience. A policy of non-attribution was used to gain unbiased comments and recommendations. To provide a more complete perspective, insights from industry are provided at Chapters V.

The Program Executive Officer (PEO). There is a general feeling among many PMs that implementing the PEO process did little to streamline the acquisition process. Since PMs formally report to PEOs, Figure 5 suggests that they do not have more than two levels of management between them and the Defense Acquisition Executive (DAE). However, in practice PMs serve many masters, and the PEO process actually has added reporting requirements, as will be explained.

PMs generally derive a great deal of their required organizational and specialized support from matrix organizations. For example, Army aviation PMs are supported predominately by offices within the U.S. Army Aviation Systems Command (AVSCOM) and other commands subordinate to the Army Materiel Command (AMC). Examples of matrix support provided include contracting, legal,

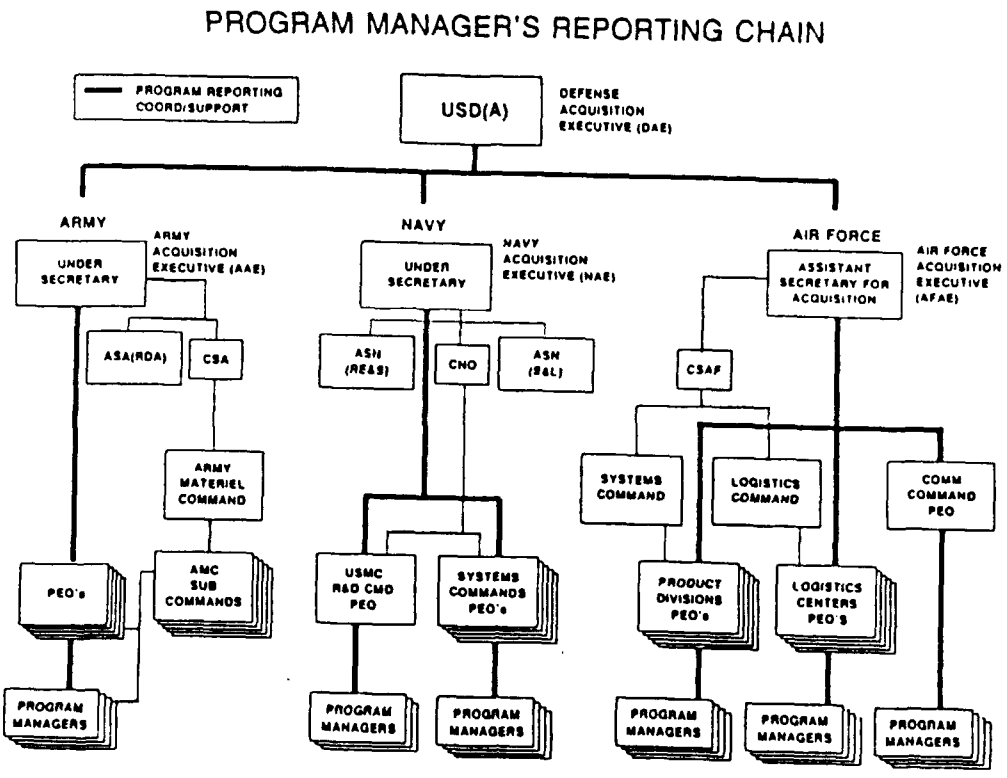


FIGURE 5.
PROGRAM MANAGER'S REPORTING CHAIN [23]

engineering, and other support services.

Conversely, in certain areas AVSCOM and AMC depend on PMs for support. Both headquarters have wide responsibilities, to include supporting fielded systems and planning future modernization programs. They depend heavily on PMs for coordination, information and a variety of support activities, including current status of ongoing programs. Based on the PM chain of command, one would think that PEOs would provide those interfaces. But PEO organizations are small, specialized administrative headquarters, and their involvement is generally obviated. Sheer volume and the

demands for timely, detailed information are compelling, and direct communications occur. PMs are understandably obliged to assist, but with no added structure to ease the burden. Thus, adding the PEO to the acquisition process in fact added reporting channels.

Some PMs believe that the PEO process has further diluted their authority. They generally feel that they have been designated responsible agents for the management and execution, while authority to make major program decisions has been reserved for others--outside committees, headquarters that provide matrix support, PEOs, and senior officials in the Pentagon.

Army Acquisition Corps. As a result of The Packard Commission and Defense Management Reviews, the Army formed the Acquisition Corps to improve professionalism in materiel acquisition. But the process takes acquisition officers out of the mainstream of field soldiering, placing greater distance between their functional area (acquisition) and the troops they support by developing their weapons. In some programs, a lack of recent field experience in the "real Army" may make little difference, while in others it could lead to serious oversights and inefficiencies. For example, technical disciplines that require a great deal of time to refine operational skills may be better served by having PMs who have recent field experience. Aviation PMs are particularly adamant about the need for cockpit experience. As in the past, civilians can serve as their deputies. We should not ignore the synergism that can be derived by teaming field experienced PMs with Deputy PMs who are experienced, fully qualified, certified members of

the Acquisition Corps. To do otherwise, we may re-learn an old lesson--it's a long way from the laboratory to the foxhole.

Oversight. Reduce congressional/GAO oversight. There is currently no system within the congressional process to discipline a continuous and increasing demand for information. PMO personnel spend inodrinate amounts of time answering congressional inquiries for detailed information, consuming effort that could otherwise be more productively used to manage programs.

Likewise, there is no centralized coordination of investigations. It is not uncommon for the GAO, Defense Contract Management Agency, Department of Defense Inspector General, Army Audit Agency, and others to each investigate a single program in the same year, often over related issues. Investigations consume time and effort from PMO and contractor personnel that otherwise would be spent on executing programs. This situation intensifies an adversarial relationship between government and industry, particularly since offices of the Defense Contract Administration Service are in constant review of program performances.

Risk Aversion. Government decision makers do not handle risk well, especially if dollars are attached to their decisions. In spite of many senior Defense officials who are recruited from the business sector where budgets and risk management are daily events, we flounder. We labor over innovative ideas and then subscribe to policies of "risk aversion". PMs fear for "sudden death" at prospects of too much risk being attached to their programs. Consequently, best efforts are often suppressed in favor

of a "sure thing". Untold opportunities for major program breakthroughs and cost savings pass unnoticed.

Budget Stability. One of the single most difficult areas for PMs to manage is related to budget stability. A fickled Congress is clearly a most destabalizing factor, and not even multiyear programs are invulnerable. Programs approved and funded one year enjoy no guaranteed insulation from the politically ambitious, or from changes in priorities. Consequently, neither government nor industry can plan more than a year in advance. Up and down yearly changes to authorizations and appropriations play havoc, often precipitating major program delays, program restructurings, and unavoidable cost growths.

In addition, OSD and service component comptrollers further destabalize programs by prescribing arbitrary budget thresholds (commitment, obligation, and disbursement goals) that can trigger massive changes to program funding allocations. Damage is done when a headquarters' view of a program (macro-level) does not coincide with a PM's view (micro-level), and PM justification and objections are ignored. PMs are left to make necessary program adjustments and to "weather the heat" for resultant inefficiencies in costs, performance, and schedule--measures often used to defend programs, justify budgets, and assess PM performance. Ironically, the same PMs can find themselves having to defend programs that are unbalanced and even unexecutable. It might make more sense to focus comptroller oversight on effectiveness of program execution as opposed to arbitrary budget execution goals. When comptrollers upset program funding indiscriminately, alternatives available to

a PM to fix his program are limited, almost non-existent. Under current law, even in instances where clearly advantageous to the government, PMs are not allowed to move funds between appropriations (procurement, OMA, RDTE, MILCON, etc.) PMs can request reprograming authority, but the prerogative of approval is reserved for the Congress.

DOD inflicts program instability when it fails to tie the Planning, Programming, and Budgeting System (PPBS) and subsequent budget decisions to baselines approved in Decision Coordinating Papers (DCP). Reduced program quantities or fundings generally stretch program years and cause unit and program costs to increase. Again, cost, schedule, and performance are affected.

Matrix Support. PMs generally do not believe that they have sufficient control over personnel assigned to support their projects. They believe that all key personnel should be assigned, or as a minimum colocated within PMOs to enhance program effectiveness and flexibility. Critical matrix support provided by external agencies located hundreds of miles away is often unresponsive. Conflicting priorities and misunderstandings over techincal issues, and even subtle nuances, cause delays and added effort. (Related issues are provided in the paragraph above, entitled the Program Executive Officer.)

Testing. Testing has proven to be one of the most costly, time consuming, and misunderstood areas of acquisition management. Imperfect planning, procedures, and analysis abound. This has resulted in a huge testing bureaucracy, and has caused separation of contractor/government testing and separation of

developmental/operational testing (DT/OT). From the PM perspective, it is time for change, focusing on initiatives that will facilitate acquisition streamlining and cost avoidance.

Testing is complex business that requires continuous management, adjustments, and modifications. Yet, even after a Test and Evaluation Master Plan (TEMP) has been approved, many PMs find that they are required to seek concurrence or approval prior to implementing decisions that affect tests, and the approval process usually involves some form of committee consensus. PMs feel that this form of micromanagement is not helpful. It leads to delays, confusion, mismanagement, and further dilution of PM authority and effectiveness.

Specific concerns include: insufficient use of government/contractor testing and DT/OT; requirements for too many test iterations; a tendency to conduct live fire testing apart from DT/OT; and failure to make sufficient use of advanced systems simulations (Hardware-in-the-loop). In addition, some modern programs involve a new, innovative process--incremental (or evolutionary) development and fielding. This is an acquisition process that is not generally well understood, but deserves the time and effort required to develop new testing methodologies and implementing guidance.

Test agencies do not share a proportionate burden of the responsibility for programs. It is as though testers view themselves as necessary and indispensable, yet as separate and immune. They are not held accountable for the actions/reactions that they generate, nor for the programs in general. Test designs

often exceed effort required to reasonably measure or predict operational suitability or operational effectiveness. In general, testers isolate themselves from developers, users, and the operational units that participate in tests, fostering adversarial relationships.

Contracting. One of the most important support functions provided to the PM is contracting. Timely, properly crafted contracts are indispensable to successful program management. Yet Procuring Contracting Officers (PCO) and support staffs are seldom assigned to PMOs, nor performance rated from within. They are usually provided through matrix organizations. This situation often results in unnecessary inefficiencies and frustrations, particularly when the priorities of a PMO and a PCO are not in sync. It typically takes 9-12 months to staff and award a contract, a source of intense frustration. Contracting is guided by many complex laws and regulations. With few exceptions, the contracting process is unrealistically inflexible. Yet in crisis situations it appears that the rules for contract management change. Strict interpretations are relaxed and waivers are easy to get. This lends me to believe that the process is artificially over-regulated.

PMs would like to see improvements in Contracting Administrating Agency (CAS) functions. As a matter of routine, legal reviews neither parallel contract reviews, nor are they conducted as a team effort. They should be, if for no other reason than to preclude reviews that are out of sync or done in a serial manner, which can result in added cost, lost time, and added

effort. But fixes will remain difficult under matrix management and as long as PMs are not allowed to select their own CAS.

Legal. The mid-1980s produced a flood of legislation related to acquisition. Much was generated by stories of waste in government spending that accompanied generous defense budgets appropriated in the early years of the Reagan administration. News headlines about $500.00 hammers, $600.00 toilet seats, and "gold-plated" coffeepots proved too tempting for the Congress. Instead of forcing DOD to clean up its act, it became fashionable to legislate reform into the acquisition process. A quick review of Title 10 of the United States Code netted the following list of acquisition-related laws enacted since 1984: [24]

Section Number	Year	Contents
2304	1984	Competition in contracting
2319	1984	Limitations and quallfication requirements
2323	1984	Commercial pricing for spares
2324	1985	Extensive rules for allowable costs; penalties for unallowable costs
2325	1986	Preference for non-developmental items
2326	1986	Restrictions on the use of undefinitized contractual actions
2329	1987	Rules for treatment of special tool and test equipment
2362	1985	Vulnerability testing requirements for wheeled and armored vehicles
2365	1986	Competitive prototypes

2366	1986	Survivability and lethality testing; operational testing
2383	1988	Quality control of spares
2401	1983	Limits on long-term leases of aircraft and vessels
2403	1984	Requirements for warranties
2409	1986	Prohibitions against reprisals against contractor employees for whistleblowing concerning government contracts
Chapter 144	1987	Major Defense Acquisition Programs (including reports, estimates, etc.)

It should be noted that Title 10 is only a part of the overall picture. Annual defense authorization and appropriation acts contain numerous acquisition provisions, with requirements ranging from drug-free and felon-free contractor workplaces to powers of Inspectors General and auditors, to name a few. Important acquisition provisions are also found in other titles of the U.S. Code, such as the Procurement Integrity Act, in Title 41 (1988).

Problems surrounding this wave of legislation are many, but principally fourfold. First, legislation came so fast that regulations (implementing instructions for the work force) could not keep pace, and Congress saying we had not improved, passed more laws. Constant change perpetuated inefficiencies that further fueled the fever. Without doubt, the 1980s marked the birth of "micromanagement".

Second, many laws contradict each other. For instance, 10 USC 2302 and 10 USC 2430 provide two different definitions (in terms of RDTE and procurement costs) for major systems. But a bandaid

fix, like Section 6 of Public Law 100-26, 21 April 1987, [25] that merely provided a chart to resolve inconsistencies between three laws passes in one session of Congress, will not suffice.

Third, when otherwise well-intending staffers commit words to legislation, even though near-verbatim restatements of DOD regulations, DOD efficiencies tend to decline. The words of law terminate waiver authorities provided in regulations. Flexibility once availed to agency proponents is now cast in stone.

Fourth, the Congress may be on the verge of forcing a large segment of industry to turn its back on the government as a result of reactive legislation passed in the wake of "Ill Wind" scandals. Contractors and individual employees are now both subject to fines and penalties and/or criminal prosecution for errors that previously may have netted only reductions in contract prices. 10 USC 2324 (unallowable costs) and 2397 [26] (post-government service employment with contractors) risk contractors and their employees to legal exposure. The Procurement Integrity Act (1988), amended in late 1989, [27] has maximum fines in the six and seven digit categories. So why should DOD be concerned? Nothing comes free. Industry will hand DOD the bill for slowing down to make one more check of its legal flanks. But the industrial base is likely to suffer the greatest casualties--legal exposure may force smaller companies from the marketplace.

Congress is well aware that it has been a part of the procurement mess, and periodically something surfaces as an attempt to correct some of the ills. The Goldwater-Nichols reorganization bill included specific recognition that the

Congress had placed too many reporting requirements on DOD, but then went on to list those that would definitely remain--several pages worth. Adding insult to injury, the provisions then went on to task the Secretary of Defense to provide yet another report--to tell the Congress all the reporting requirements they had imposed.

In all fairness, there are those on Capitol Hill who realize that some of the cures are worse than the poison, and they are attempting to restrain from legislative "help". Employees of the Executive branch must also do their part. For certain, we must avert situations that lead to unwanted congressional interest. Scandals like the Navy A-12 program, reminiscent of "gold-plated" coffeepots, could prove too tempting for yet another barrage of congressional help.

Requirements. Changing military requirements spark major frustrations and misunderstandings between various groups--users and developers, and even the Pentagon and Capitol Hill. Rationale that makes imminent sense to one group may be totally illogical to another. But requirements will continue to change for a variety of good reasons--revised threat estimates, emerging technologies, new priorities, availability of funds, politics, and so on.

The dilemma for PMs is that minor changes to requirements may cause radical modifications to programs. Costs, schedules, performance, and even scope can be affected. PM's believe that most changes could be avoided. From their perspective, early appointment of responsible proponents, well analyzed threats, mature MNS and ROCs, and alignment of major changes to correlate with program milestones would help to stabilize most programs.

PMs also believe that requirements should be carefully weighed against commercial alternatives before specifications are fixed. Military standards (MILSTD) and military specifications (MILSPEC) are generally appropriate for equipment that will be used in combat environments and at combat operational tempos. But there are conditions under which MILSTDs and MILSPECs, which usually translate to higher program costs, may not be required to achieve suitable performance. For example, the Army developed a training device called GRETA (Ground Radar Emitters Training Aviators), also called the TRTG-9 (Tactical Radar Threat Generator), to provide aviators realistic inflight threat radar simulation training. Electronic components (resistors, diodes, capacitors, etc.) prescribed for use in the system were required to meet MILSPEC. Rationale was that the GRETA had to be able to operate in all the environments where soldiers would train to fight. Yet, GRETA is not a weapon system on which lives and military objectives depend, it is a training device. As a result, when electronic components were required for repairs, delays and added expenses were incurred while awaiting delivery of MILSPEC repair parts. It seemed as though GRETA stayed broken more than it was operational. Eventually, commanders forced the use of commercial parts (readily available in local retail sources). Added expenses were avoided and the availability of GRETA made a radical turn around. [28]

Provisions of the Packard Commission recommendations should help facilitate acquisition of commercial components/equipment to meet future military requirements.

Joint Requirements. Each of the Services develops requirements by different methods. This creates difficulties when a weapons system is intended to serve the needs of more that one Service, or when it is developed by one Service for another. Assumptions and oversights cause problems, added time and effort, incomplete data, funding shortfalls, frustration, etc. In addition, if true interoperability is to be achieved, a standardized requirements system is a must. The same arguments may be applicable for the Qualitative and Quanititative Personnel Requirements Information (QQPRI), Operational and Organizational Plans (O&O), and perhaps even Basis of Issue Plans (BOIP).

Acquisition Strategy. There is a perception by some PMs that over their objections, programs are sometimes designed around unrealistic development schedules. Two specific concerns were expressed. First, unrealistic schedules may lead members of OSD and the Congress to believe that a program is in trouble or is experiencing delays when in fact it is achieving reasonable and realistic progress. Second, when research is too compressed, complications can surface later in the development process, resulting in lost capabilities, delays, and cost growth. In both cases, PMs and their programs are subject to unwarranted criticism that can adversely affect funding and support.

Another concern is that expectations are too high for dual contractor acquisition strategies. They are not panaceas. Although they may result in contractors better understanding requirements, and sometimes even better designs, they also foster "gold-plating". Unfortunately, system deficiencies and

gold-plating are difficult to detect during front end "paper" competitions. Often it is not until fabrication when these issues become clear. In the end, the government must bear the resultant burdens of cost overruns, schedule delays, and degraded capabilities. The PM message: Carefully weigh short-term and long-term benefits. Do not assume that a dual contractor acquisition strategy will result in better and/or less costly weapons systems. Competition can be beneficial, but it can also lead to unnecessary capabilities and expenses under certain circumstances.

CHAPTER V

INSIGHTS FROM INDUSTRY

This chapter documents industry's perspective of problems and concerns with the acquisition process. Issues were solicited from employees from each of the four major U.S. corporations that manufacture helicopters for the Army. A policy of non-attribution was used to gain unbiased comments and recommendations. Editorial changes were made to responses for ease of reading, but care was taken to preclude altering expressed intent. Related issues are grouped together under common titles for organizational convenience. To provide a more complete perspective, related insights from government are provided at Chapter IV.

Program Executive Office (PEO). Industry appears relatively ambivalent toward the PEO system, perhaps because it is a new system. But in general, they see relatively the same advantages and disadvantages expressed in Chapter IV.

Oversight. The DOD-industry interface can no longer be viewed as an open partnership; there is clearly an adversarial relationship. This feeling appears to have grown significantly from perceptions that the DOD Inspector General Office operates autonomous to DOD and is considered to be almost out of control. The OSDIG reportedly even proposes legislation directly to the Congress, bypassing formal coordination with OSD and the Office of Management and Budget, a "must stop" in the view of industry.

Overall, industry sees little meaningful discipline to the oversight process. It appears that almost any agency can conduct an audit at will, irrespective of permanent government on-sight

auditing programs. Coordination between agencies to preclude duplication is rare. There is no incentive to expedite or to conclude government investigations, nor is there urgency to come to decisions, especially if issues are controversial. In the interim, contractors must absorb the associated costs of time and effort, and sometimes even delayed income (withheld progress payments) while awaiting government decisions. In addition, the government requires "certification of everything," a solution to nothing. These are very emotional and frustrating issues--a unanimous view.

Budget Stability. There is a perception that budget stability is less achievable now than at any previous point in recent history. During the Reagan-Weinberger administration, defense acquisition authority was decentralized. With growing defense budgets tarnished by headlines associated with scandals over "gold-plated" hammers and toilet seats, Congress could not resist the temptation to legislate centralized control. Predictably, the Services and DOD resisted. In response, the Congress exerted more pressure on the budget, and agencies scrambled to protect their pieces of the budget. As a result, the Congress was distracted from important national and international issues and the Services became more polarized. Now the nation is in recession, oversight is out of control, and acquisition management is in disarray. Every action results in reaction, and now budget stability is virtually nonexistent.

Contracting. Government contracting requirements are seen as bureaucratic, inefficient, and wasteful. In comparison, the terms

and conditions to conduct commercial sales are very simple. For example, where government contracting may result in many thousands of pages of documentation, commercial sales of billions of dollars for aircraft are usually concluded in a few hundred pages.

Government and industry have long seen benefits to be achieved from procurement of commercial parts for government requirements. To do so requires approved deviations to the defense acquisition regulations. One contractor reported that requested devlations submitted over two and a half years ago are still tangled in "red tape".

Legal. Contractors struggle under a mountain of legal requirements many of which were discussed in Chapter IV. Perhaps a good example of an acute form of "how to" provided by congressional legislation resides in the Procurement Integrity Act. For each contract, contractors are required to certify that they know the provisions of the act and that they have not violated them, or that they have made all violations known to government contracting officials. Contractor employees and government procurement officials must also certify they are aware of the provisions. Every contract file must now contain a list of all people who have had access to source selection information relating to that procurement and copies of certificates from all employees involved. (Imagine the size of the effort required for a major project, or for multiple projects undertaken by one firm.) Industry believes that it would be easier and just as effective to integrate certification requirements in contractor/agency standards of conduct provisions.

Overall, many in industry believe that if major reform is not achieved in the acquisition process, that many more companies will turn away from government contracting, adversely affecting military readiness and the economy.

Requirements. Industry views military requirements as fickled and victimized--fickled by uncertainty and change (discussed in Chapter IV) and victimized by budget cuts. Detailed acquisition-related documentation required for many valid reasons also ends up with budget analysts. Pressed to find funds for added/changing priorities, analysts often search for easy justification to move money between programs. When justification is taken out of context, a popular tactic used by "budgeteers", programs already approved and underway can be hurt financially. In response, industry and government may find themselves having to tailor (hedge) requirements. The risk is that if programs are de-scoped to a point where capabilities lag, they become vulnerable to cancellation. It is easy to appreciate why budget reforms are high priority from an industry perspective.

Industry also feels miffed by current law prohibiting collusion with government agencies and contracting officials in formulating requirements. Government loses industrial insights that might otherwise help to stabilize programs. Industry, of course, loses added insights that might prove helpful in developing competitive positions. From an industry perspective, it would be better if too many contractors were consulted than for too little information to be exchanged with those who will ultimately provide future defense needs.

Financial Condition. As might have been predicted, a great deal of emphasis from industry focused on financial policies. Unlike government, industry is ultimately responsible to shareholders, and profit is the "bottom line". In general, there is a feeling that government well understands this principle, but tends to have great difficulty accepting and dealing with it. A related area of concern is progress payments. High interest rates and small progress payments can have severe and direct impacts on company cash flow. Industry can ill-afford to finance DOD projects from private funds, and government is morally responsible to ensure that full and timely funding is provided.

10 USC 2323 basically requires that contractors price government spare parts comparatively with what commercial customers are charged, and that industry certify it in writing. The problem is that all documentation takes time and effort, none of which are free to a contractor. As a result, many small contractors are forced to abandon business with the government; they can't afford the "red tape". The ultimate loser is the industrial base.

Fixed price development programs for hightech initiatives are probably a thing-of-the-past. Those interviewed stated that their companies believe the risks are too high, and none are prepared to weather another A-12 scandal (directly related to fixed price cost overruns in a development program). As the government clamps down on practices like making up R&D cost overruns in production, there are few choices other than to accept only those types of contracts that will fully fund development efforts. Perhaps a positive

benefit will be better early designs, eliminating many engineering change proposals (ECP). (It doesn't take a lot of imagination to figure out that expensive ECPs could be used to overcome less than adequate designs that ultimately pay for losses from such things as contract buy-ins and development cost overruns.)

Information Exchange. Recent laws and implementing directives have seriously degraded effective communications between government and industry. Employees in both camps are so fearful of legal consequences resulting from what they may inadvertently say or do, that even routine, reasonable discussions and exchanges of information are hampered. Detailed checklists are reportedly being used to prescribe agendas by which to conduct meetings legally. Consequently, much effective dialogue is negated, resulting in added frustrations and indecision.

It is almost incomprehensible how a democratic nation so jealously protective of the First Amendment of the Constitution could so effectively inhibit open communications. Clearly this is a serious problem that warrants rapid resolution. But industry is perhaps equally concerned with a more consequential issue--how to maintain a competitive posture. Corporations depend on open communications to derive sufficient information on which to base business decisions, such as the focus of internally funded R&D. The consequences of incomplete or misleading information are intuitively obvious. Contracts, generally awarded on a basis of best proposals, state-of-the-art included, are won by those most prepared. Consequently, industry overwhelmingly would rather see too much information shared by Uncle Sam. (This translates to

opening information channels, perhaps not as accessible to smaller companies in the past, even if this allows them stronger competitive positions against larger corporations.) From a national perspective, we can not allow situations to continue that will further erode our industrial capacity or our military strength.

CHAPTER VI

IMPROVING THE ACQUISITION PROCESS

Government, industry, and academia have conducted many thorough studies on acquisition management to determine its ills and to suggest cures. But what has not materialized for implementation is a comprehensive DOD corrective action plan.

The politically ambitious saw ripe opportunities in the perceived inability of DOD to police its own processes, and moved swiftly to help bring reform to a "corrupt and wasteful" acquisition bureaucracy. In the 1980s, it became fashionable to investigate, legislate, and regulate the acquisition process to "perfection". But for the most part, significant long-term effects have not materialized. Too much attention was focused on short-term fixes, such as programatics (fundings, authorization, and "how to") and fraud and ethics legislation. What the Congress failed to comprehend was that the DOD acquisition process is just too complex to be resolved by a barrage of piecemeal legislation. Again, for want of a comprehensive plan of reform, most legislation treated the symptoms while remaining indifferent to providing cures.

In mid-1980s the government began more concerted efforts to improve the defense acquisition process. The most significant policy and structural changes resulted from two key undertakings: a study conducted by the President's Blue Ribbon Commission on Defense Management (the Packard Commission, 1985-1986) and the Goldwater-Nichols DOD Reorganization Act of 1986 (Public Law 99-433). The Packard Commission primarily reviewed the DOD

acquisition process and organizational management within the Joint Staff. After approval by the President in 1986, its recommendations were implemented by National Security Decision Directive 219. Many of its provisions were also included in legislation, the DOD Reorganization Act. The law created positions for an Under Secretary of Defense for Acquisition (the central authority for DOD acquisition management) and for a Vice Chairman, Joint Chiefs of Staff (the central authority for joint acquisition interests).

Many improvements have been made to the acquisition process as a result of NSDD 219 and the DOD Reorganization Act. Requisite policies, practices, and procedures have been provided in a revision to DOD Directive 5000.1 and in DOD Manual 5000.2-M, and Defense agencies have worked vigorously to implement acquisition streamlining initiatives. But there is more work to be done, much more.

If this nation is to maintain a credible defense posture and achieve a strong industrial base in a period of projected budget reductions, additional sweeping changes to the acquisition process are imperative. Notwithstanding, political realities would suggest that the likelihood of gaining support for wholesale implementation of any single plan centered on the merits of acquisition efficiencies alone, no matter how well conceived, is unlikely. Therefore, I would suggest that a better course of action is to develop a comprehensive plan of prioritized activities that can be implemented progressively over time. Developed in an atmosphere of commitment and cooperation between

the Executive and Legislative branches of government, with sensitivities to political considerations as well as to economic and military issues, an omnibus plan stands a reasonable chance of success. But because meaningful reforms will take years to implement, provisions for refinement also will have to be provided, and at regular intervals, perhaps annually.

Timing for a concerted DOD initiative to improve the acquisition process is very good. As a result of Operation Desert Storm, the public is firmly in support of the military. Ironically, congressional intentions to cut military spending and force structure came not only at a time when we were approaching war, but now while the media is telling the public that had war followed proposed cuts, combat readiness would have been degraded. Many senior leaders are uncomfortable with the levels of proposed cuts, but have acquiesced due to appreciation for the national economic situation. These circumstances provide the possibility of a tremendously favorable win-win situation. If DOD were to propose economic and legislative initiatives that would lead to substantially more efficient expenditures of tax dollars, such as are possible through major reforms to acquisition legislation, both DOD and the Congress would benefit. Cost savings could avail additional funds for both discretionary and defense programs. The public, the Congress, and the military would all benefit.

Recommendations

1. Executive-Legislative Commitment. Direction from top national leadership is probably the only feasible means by which to achieve meaningful acquisition reform in the near-term. Propose that the Administration host a joint meeting with senior Legislative representatives to develop and issue guidance to DOD and congressional staffs to develop legislation to reform the acquisition process in a finite period of time.

Democracy, though effective at serving majority needs, is seldom credited with being particularly fast or efficient. The wheels of progress turn slowly. Cooperation and harmony between divisions of government strain under the weight of opposing views and changing priorities. A result is stagnation of progress in the face of scandalous inefficiencies. But history is replete with examples of visions that have overcome obstacles and paved roads to progress. The DOD acquisition process is a mess and it must be fixed.

Relationships between DOD and the Congress are far from ideal. Why? DOD has no particular quarrel with being directed to do something, but there is resentment for being told how, particularly when the "how" is legislated in place of a more appropriate "what". Relationships are then further eroded when the Congress attempts to disguise its tinkering and micromanagement under a veil of prerogatives assured by the Constitution--principally, the powers of oversight, and authority to raise armies. (Note: DOD officials become particularly outraged

when the term, "the Congress," actually is the position of certain staffers, whose opinions represent neither the will of the Congress nor the views of the Executive Branch.) No less burdensome is the discontent from inefficient expenditures of billions of defense dollars every year.

Notwithstanding, DOD and the Congress would agree that efficiency in defense (almost inseparable from the budget) is an important national objective. The issue is how to best achieve this objective. Alternatives are almost unlimited. But in today's environment of involvement by upper level management, what is needed to achieve effective reform is joint Executive-Legislative commitment. There is precedence--the Administration and Congress negotiated to cap the budgets for FY1991-1995 in order to reduce the effects of the national deficit. [29] There is reason to believe that this visionary initiative will be successful.(It is quite possible that a secondary effect will be improvement in the budget approval process.) Likewise, if the Administration and the Congress were to commit to an agreement to radically overhaul the acquisition process, potential cost savings may exceed $36 billion annually. Working from terms of reference defined in a joint Executive-Legislative proclamation, the OSD and congressional staffs could draft appropriate legislation to significantly and effectively reform acquisition management.

I see this undertaking as a three phased process. First, a joint Executive-Legislative committee must be convened. The purpose would be to develop a proclamation to provide the DOD and congressional staffs with guidance from which to develop an

omnibus plan for implementation. Major considerations might include national objectives and major political, economic, and military considerations. As example, major political considerations might include ways to maximize employment or to derive maximum commercial utility from defense developments. A major economic consideration might be to seek a more favorable national posture of competition in the world market. A major military consideration might be to reduce defense dependency on foreign sources to develop and sustain military hardware. Other guidance must include a timetable for implementation and a methodology by which cost savings are to be applied. (The Congress would probably claim a majority share, but apportioning a reasonable share to DOD would incentivize fullest cooperation.)

Second, DOD and congressional staffs would jointly draft legislation to maximize efficiencies from the acquisition process. Inherent should be a comprehensive plan for time-phased implementation. A major objective should be the elimination of bureaucratic obstacles and "business as usual" that result in perpetuation of a 12-15 year development process, and which impede acceptance of unique forms of program management based on evolving technologies. Trial programs and procedures should be identified as test cases to be monitored to validate the effectiveness of most recently enacted legislation.

Third, the omnibus plan should be implemented through legislation. Annual revisions (fine tuning) may be required, for which progress briefings could be provided to the joint

Executive-Legislative committee. Findings could then provide the basis for further guidance to the staffs.

2. Program Structuring. In order to derive the maximum advantages for the nation from defense programs, they must be based on all pertinent considerations. Not only the major end item, but the entire system (natural resources, lead times, industrial base, spares, etc.) must be put in proper perspective. What I am suggesting is a radical departure from conventional means used to restructure a program, as a result of a budget cut, for instance. In the past, major end items (the "big ticket" items) received the major consideration as a result of budget cuts. In the future, if a budget should shrink, and we want to maintain global technical superiority against a given threat, we must be more efficient in how we restructure a program. Salami slicing spares, industrial base, training, military construction, etc., do not necessarily make sense. A comprehensive plan must be in place in order to allow for a proactive action instead of more conventional reaction.

Future programs must be structured on considerations other than required quantities alone. As example, if a sensitivity analysis were done at the beginning of a new program and it was decided that we could buy 200 new aircraft, but that there would be no industrial base to support those aircraft beyond the forty-fifth day of war, a "war stopper," we should restructure the acquisition strategy. If further analysis showed that by buying 30 fewer aircraft, or by stretching the production program by two years, that we could maintain an industrial base for six months

with an ability to surge production to meet wartime requirements within that six months, we should select the second acquisition strategy. For those who say that is exactly what is done now, I would say, only on the surface. There is seldom adequate consideration given to a whole program in reaction to budget cuts. For sure, spares and industrial base suffer for lack of total planning. This is not to suggest that other factors have not been considered in the past, but rather that a more structured process is necessary in the inevitability of leaner budgets.

In order to maintain a credible, modern military capability in constrained budget years throughout the 1990s, we will have to develop an ability and a willingness to adapt more readily to tangential issues that affect programs. We will have to be more sensitive to the impacts that programs may have on political and societal issues (like the job market, applications for commercial use, and international competitiveness.)

3. Congressional Audit. The Congress should direct the GAO to conduct a full in-house audit of the entire spectrum of legislation imposed on the acquisition process. Its findings should be used as a key element for the legislative reforms to be developed jointly by the DOD and congressional staffs.

4. Oversight and Stability. Reduce oversight and increase program stability. The two areas of strongest PM criticism for acquisition are oversight and program stability. By reducing oversight at PMOs and contractor facilities, program management and efficiency may improve proportionately. Certainly, the efforts of PMO and contractor personnel could be focused more on the

management of their programs. Likewise, by stabilizing programs in terms of funding and quantities, program management and efficiency would improve. Recommended means include:

a. Oversight.

(1) Put absolute authority for program management in the hands of PMs and hold them responsible for their actions. Use the chain-of-command to ensure discipline and efficiency and to insulate them from outside interference. Supporting agencies should be focused on providing the best possible support, not on criticizing and providing ad hoc oversight. Today, PMs generally feel that they do not have enough authority and backing to substantially impact the outcomes of their programs. If an efficient chain-of-command, mission orders, and responsibility serve the best interests of troop units, and they do, it is likely that the same will hold true for program management. For added efficiencies that are potentially achievable, surely senior leadership could assume the added risks associated with putting major decision authority in the hands of responsible, well-groomed PMs. Associated "audit trails" that would result would facilitate taking timely corrective action, further reducing unnecessary waste of funds and effort.

(2) Request the Congress establish a central office through which to direct inquiries for information from DOD. Establish a like office in OSD. Purpose would be to reduce the unnecessary and duplicate requests for information. (This in not to suggest that there should not be direct communications from the Services to the Congress; there should be.) But currently, there

are too many random, unnecessary requests for detailed information for which there is no in-place means to regulate.

(3) Request the Congress to establish a central point for authorizing audits and investigations. Establish a like office in OSD. Purpose would be to increase efficiencies by eliminating unnecessary and duplicate audits and investigations.

b. Program Stability and Simplicity.

(1) As a part of program milestone decisions, predetermine a series of funding/quantity thresholds on which to base future program decisions. For example, if a missile buy is set at 5,000 missiles based on an approved acquisition objective, and the program threshold is 3,000 missiles, a quantity below which it is neither economically nor tactically feasible to continue the program, then kill the program. Between the two quantity thresholds, establish reasonable increments on which to base future program decisions. Make this type of criteria a part of approved acquisition plans. This kind of planning would provide a decision matrix for dealing effectively with budget uncertainties, and would help reduce program instabilies as a result of "salami slice" budget reductions that in the past have rendered programs inefficient and ineffective. By making such figures a part of an approved acquisition strategy, reactions to budget drills could be proactive as opposed to reactive.

(2) Tie PPBS to Defense Acquisition Board decisions in order to stabilize programs. Once the DAB approves a program, it should be implemented in accordance with criteria established by the DAB, not subject to other manipulations by comptrollers. If

the budget will not fully fund a program, then the process outlined in the paragraph 4b(1) above should be implemented.

(3) Contracting is too complex. It is managed under a complex web of bureaucracy, laws, and regulations. However, when a crisis occurs, bureaucracy and complications diminish, waivers are easier to come by, and contract requirements are eased. Therefore in the spirit of "train as we fight," contract regulations should be revised and streamlined. Where appropriate, procedures and regulations applicable to the "black" programs and to DARPA, that streamline contracting, should be implemented as a standard of operations.

5. Review the PEO Process. There is no doubt that the PEO process is a statutory requirement, but its true effectiveness is questionable. OSD should conduct a joint review of the PEO process to determine its effectiveness, and to determine recommendations for improvement. A report should then be appropriately provided to the Congress. If it is determined that the PEO process is ineffective, then propose corrective legislation to the joint Executive-Legislative committee to revise legislation.

6. Matrix Organizational Support. Careful consideration should be given to the organizational makeup of every PMO. Matrix organizational support is not the most efficient for all programs, or even for all phases of a given program. Based on military, political, and other programatic sensitivities, the DAB or Service Acquisition Executive should approve appropriate PMO structures.

7. Testing. OSD should conduct a joint review of testing to develop and adopt testing requirements and procedures more in line

with budget realities and the sophistication of development processes. Major issues are provided in Chapter IV.

8. Legal and Contracting. While awaiting the outcome of a legal audit by the GAO (paragraph 3 above), OSD and the Services should conduct thorough reviews of legal and contracting requirements in an attempt to facilitate acquisition streamlining. Indications are that DOD agencies could do much to reduce work efforts created in-house or by bureaucracy, inconsistencies, and non-standard interpretations of law and regulations

9. Joint Requirements. If there is one lesson to be learned from joint combat operations, it is a need for absolute interoperability. Every tactical capability from communications to firepower to logistics hinges on its ability to interface effectively with other/allied services.

Right now, each of the Services defines military requirements differently. This leads to incompatibilities, redundancies, and wasted resources. To overcome this deficiency, the Joint Staff should provide comprehensive, yet simple criteria and procedures for development and approval of materiel requirements. Prior to starting a service-unique program, that Service should be required to certify that its requirement meets joint interoperability criteria. This would not only provide for interoperability in such areas as transportability and communications, but would ensure compatibility should that system be needed by another Service sometime in the future. For joint programs and for items to be developed for more than one service, each Service and the Joint Staff should approve their requirements.

10. Other Recommendations. Other important recommendations, but of relatively less scope, are provided in Chapters IV and V, Insights from Government and Insights from Industry, respectively.

Conclusion. Continued attempts to reform the acquisition process through piecemeal DOD and Service initiatives and annual congressional legislation, at best, will meet with marginal results. The approach of a dwindling Defense budget is imminent. With billions of dollars per year in the balance, and the public firmly in support of the military, it is prudent to tackle this problem now. I sincerely believe that the American people would rally to support a Defense initiative for acquisition reform, particularly because of the billions of dollars that could be availed to other needed programs. I believe that the public would view this as a a noble gesture from a sensitive and caring Department of Defense, not only efficient and victorious in the prosecution of the Gulf War, but efficient and supportive of the public will--government by the people, for the people, and of the people.

TABLE 1

EXAMPLES OF MATERIEL ACQUISITION ACTIVITIES

WORK FUNCTION OR ACTIVITY/ LIFE CYCLE PHASE	RESPONSIBLE ORGANIZATION	FUNCTIONAL AREA
PRE-MILESTONE ZERO		
Recognize Need/Threat	2	1
Prepare Mission Area Analysis	3	1
Conduct Long Range R&D Planning	3	2
Prepare Draft Acquisition Strategy	3	2
Study Advanced Technology	6	7
Prepare Program Objective Memorandum	3	3
CONCEPT EXPLORATION/DEFINITION		
Congress Enacts Budget Legislation	1	3
Evaluate Concepts	7	7
Develop Producibility Plan	4	8
CONCEPT DEMONSTRATION/VALIDATION		
Approve Acquisition Plan Baseline	2	10
Approve Acquisition Plan	3	2
Conduct Safety Review	3	6
Evaluate and Approve Contractor Plans	4	2
FULL SCALE DEVELOPMENT		
Prepare and Submit Proposal	5	4
Prepare DTIIA Test Report	6	9
Approve Initial Spares Support List	4	5
Develop Production Requirements Spec	5	8

PRODUCTION

Conduct Government Training	7	6
Submit Selected Acquisition Report	2	10
Award Contract	4	4
Approve Waivers and Deviations	4	8

LEGEND

RESPONSIBLE ORGANIZATIONS

1 Congress
2 OSD/JCS
3 Services
4 PM/PEO
5 Contractor
6 Labs & Test Centers

WORK FUNCTIONAL AREAS

1 Requirements Definition
2 Program Management
3 Finance
4 Contracting
5 Logistics
6 Manpower, Personnel, Safety, and Training
7 Engineering and Configuration Management
8 Manufacturing and Quality Assurance
9 Test and Evaluation
10 Oversight

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